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APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
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06/27/2005

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EXAMINER

PHU, PHUONG M

ART UNIT

PAPER NUMBER

2631

DATE MAILED: 06/27/2005

Please find below and/or attached an Office communication concerning this application or proceeding.

Office Action Summary

Application No.

09/788,211

Applicant(s)

JOSEFSSON ET AL.

Examiner

Phuong Phu

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-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If the period for reply specified above is less than thirty (30) days, a reply within the statutory minimum of thirty (30) days will be considered timely.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

- 1) ☒ Responsive to communication(s) filed on 10 June 2005.
- 2a) ☒ This action is **FINAL**. 2b) ☐ This action is non-final.
- 3) ☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

- 4) ☒ Claim(s) 1-39 is/are pending in the application.
- 4a) Of the above claim(s) 10-24 and 35-39 is/are withdrawn from consideration.
- 5) ☐ Claim(s) _____ is/are allowed.
- 6) ☒ Claim(s) 1,3-6,8,9,25-27 and 31-34 is/are rejected.
- 7) ☒ Claim(s) 2,7 and 28-30 is/are objected to.
- 8) ☐ Claim(s) _____ are subject to restriction and/or election requirement.

Application Papers

- 9) ☐ The specification is objected to by the Examiner.
- 10) ☐ The drawing(s) filed on _____ is/are: a) ☐ accepted or b) ☐ objected to by the Examiner.
Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).
Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).
- 11) ☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

Priority under 35 U.S.C. § 119

- 12) ☐ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).
- a) ☐ All b) ☐ Some * c) ☐ None of:
- ☐ Certified copies of the priority documents have been received.
 - ☐ Certified copies of the priority documents have been received in Application No. _____.
 - ☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

* See the attached detailed Office action for a list of the certified copies not received.

Attachment(s)

- | | |
|--|---|
| 1) <input type="checkbox"/> Notice of References Cited (PTO-892) | 4) <input type="checkbox"/> Interview Summary (PTO-413)
Paper No(s)/Mail Date. _____ |
| 2) <input type="checkbox"/> Notice of Draftsperson's Patent Drawing Review (PTO-948) | 5) <input type="checkbox"/> Notice of Informal Patent Application (PTO-152) |
| 3) <input checked="" type="checkbox"/> Information Disclosure Statement(s) (PTO-1449 or PTO/SB/08)
Paper No(s)/Mail Date <u>2/28/05</u> . | 6) <input type="checkbox"/> Other: _____ |

DETAILED ACTION

This Office Action is responsive to the Applicant's Response filed on 6/10/05.

Claim Rejections - 35 USC § 102

1. The following is a quotation of the appropriate paragraphs of 35 U.S.C. 102 that form the basis for the rejections under this section made in this Office action:

A person shall be entitled to a patent unless –

(e) the invention was described in a patent granted on an application for patent by another filed in the United States before the invention thereof by the applicant for patent, or on an international application by another who has fulfilled the requirements of paragraphs (1), (2), and (4) of section 371(c) of this title before the invention thereof by the applicant for patent.

The changes made to 35 U.S.C. 102(e) by the American Inventors Protection Act of 1999 (AIPA) and the Intellectual Property and High Technology Technical Amendments Act of 2002 do not apply when the reference is a U.S. patent resulting directly or indirectly from an international application filed before November 29, 2000. Therefore, the prior art date of the reference is determined under 35 U.S.C. 102(e) prior to the amendment by the AIPA (pre-AIPA 35 U.S.C. 102(e)).

2. Claims 1 and 25-27 are rejected under 35 U.S.C. 102(e) as being anticipated by Raghavan (6,415, 003), previously-cited.

-Regarding to claim 1, see figures 2 and 6, and col. 4, line 46 to col. 7, line 47 and col. 10, lines 20-62, Raghavan discloses a system (see figure 2) comprising:

a transmitter circuit "transmitter" (see col. 4, line 64);

a receiver circuit (200);

a transmission medium (10) having a transfer function ($f(z)$) for transmitting a transmission signal between said transmitter and receiver circuits; and

a calibration circuit (208) responsive to an altered reference signal (r_k) of said transmitter circuit altered by the transmission medium for adjusting the reference signal level (V_{REF}) of the receiver circuits to compensate for variations in the transmission signal due to said transfer function.

-Regarding to claim 25, Raghavan discloses a control circuit (comprising (207)) coupled to the transmission medium to synchronize the adjustment of the reference signal level (see figure 2).

-Regarding to claim 26, Raghavan discloses that the control circuit includes a clock circuit (207) (see col. 4, lines 60-61).

-Regarding to claim 27, Raghavan discloses that the control circuit further includes channel control circuit (206, 211, 202, 203, 212, 201, 204, 205) for controlling, at the receiver, compensations on channel distortion, random noise and signal losses cause by the channel function ($f(z)$) (see col. 5, line 8 to col. 7, line 47).

Claim Rejections - 35 USC § 102/103

3. Claims 3 are rejected, under 35 U.S.C. 102(e) as being anticipated by, or under 35 U.S.C. 103(a) as being unpatentable by, Raghavan.

-Regarding to claim 3, Raghavan discloses that said transmission medium are transmission lines such as twisted copper pair, coax cable, etc. These transmission lines inherently, or obviously by one skilled in the art), has an equivalent circuit model represented by a circuit comprising a capacitor circuit "isolation barrier circuit".

Claim Rejections - 35 USC § 103

4. The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

(a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negated by the manner in which the invention was made.

5. Claims 4, 6, 8 and 31-34 are rejected under 35 U.S.C. 103(a) as being unpatentable over Raghavan in view of Hoekstra (5,883,907) (previously-cited).

-Regarding to claim 4, Raghavan discloses that said receiver circuit includes an analog to digital circuit (203) having an analog input coupled to the transmission medium for receiving an analog symbol stream communicated across the transmission medium and providing a digital output signal (x_k) (see figure 2)..

Raghavan does not disclose said transmitter circuit includes a digital to analog circuit having an analog output coupled to said transmission medium and an input for receiving an digital input signal to be communicated across said transmission medium.

Hoekstra discloses a transmitter (12) (see figure 1) for transmitting data symbol stream across a transmission medium (34) to a receiver (14) at the other end wherein the transmitter comprises a digital to analog circuit (D/A) (see figure 2) having an analog output coupled to said transmission medium and an input for receiving a digital data symbol stream (outputted from (80)) to convert said digital data symbol stream into an analog data symbol stream to be communicated across said transmission medium (see figures 1 and 2, and col. 2, line 31 to col. 3, line 67).

Since Raghavan does not disclose in detail how the transmitter circuit is implemented, therefore, for an application of implementing said Raghavan transmitter circuit, it would have been obvious for one skilled in the art, to implement Raghavan transmitter circuit in such a way that the transmitter circuit would comprise a digital to analog circuit (D/A) having an analog output coupled to said transmission medium and an input for receiving a digital data symbol stream to convert said digital data symbol stream into an analog data symbol stream to be communicated across said transmission medium to be received by the receiver circuit, as taught by Hoekstra, without affecting the overall system performance.

-Regarding to claim 6, Raghavan in view of Hoekstra teaches that said transmitter comprises an encoder circuit (80) responsive to a digital input signal to provide said digital data symbol stream and a digital to analog converter ((D/A) responsive to said digital data symbol stream signal to provide to said transmission medium an analog data symbol stream signal (see Hoekstra, figure 2).

-Regarding to claim 8, as applied to claims 4 and 6, Raghavan in view of Hoekstra discloses that said analog to digital circuit includes an analog to digital converter (203) (see Raghavan, figure 2) responsive to a analog input (r_k) from the transmission medium to provide a digital signal (x_k). Raghavan in view of Hoekstra further teaches that the receiver circuit could be implemented to include a decoder circuit (82) responsive to said digital signal to provide a digital output signal (see Hoekstra, figure 2).

-Regarding to claims 31 and 32, Raghavan in view of Hoekstra discloses said analog output and said analog input can be constant average signals (NRZ, MLT3, etc) having constant averages (see Raghavan, col. 1, lines 31-62).

-Regarding to claim 33, Raghavan discloses that said calibration circuit includes a reference signal capture circuit (104) for capturing an altered reference signal and providing said altered reference signal to said receiver circuit, wherein said altered reference signal compensates for variations in the transmission signal due to said transfer function (see Raghavan, figure 1A).

-Regarding to claim 34, Raghavan discloses that said calibration circuit includes a reference signal averaging circuit (202) connected to said reference signal capture circuit for averaging "smoothing" by "noise filtering" said altered reference signal and providing an averaged altered reference signal to said receiver circuit (see figure 2, and col. 5, line 65 to col. 6, line 2).

6. Claims 5 and 9 are rejected under 35 U.S.C. 103(a) as being unpatentable over Raghavan in view of Hoekstra, and further in view by Salinger (prior art of record).

-Regarding to claims 5 and 9, Raghavan in view of Hoekstra discloses that said digital to analog circuit includes a digital to analog converter (D/A) with an input for receiving a digital input signal (see Hoekstra, figure 2), and said analog to digital circuit includes an analog to digital converter (203) (see Raghavan) responsive to a analog signal to provide a digital output signal.

Raghavan in view of Hoekstra does not disclose a modulation circuit responsive to said digital to analog converter for providing an analog output to be transmitted on the transmission medium and a demodulator circuit responsive to an analog input received from the transmission medium to provide said analog signal to said analog to digital converter.

Salinger teaches using a modulation circuit (24), at a transmitter (TRANSMITTER), to up-convert a signal (to be transmitted on a transmission channel (30) to a receiver (RECEIVER) at a receiving end) to the transmission frequency bandwidth of the transmission channel, being required by his system, and a demodulation (36) at said receiver to down-convert said received up-converted signal for recovering said signal (see figure 2, and col. 5, lines 32-67).

It would have been obvious for one skilled in the art, when building or carrying out Raghavan invention in view of Hoekstra, upon a system's requirement on its transmission frequency bandwidth of a transmission channel, to implement Raghavan invention in view of Hoekstra with a modulation and demodulation, as taught by Salinger, in such a way that the transmitter circuit would comprise a modulation to up-convert the analog output signal outputted from the digital to analog converter to the required bandwidth of the transmission channel for the transmission on the transmission medium, and the receiver circuit would comprises a demodulator for receiving and down-converting said up-converted signal to the analog signal to be provided to the analog to digital converter, in order to meet the system's requirement on its transmission frequency bandwidth.

Allowable Subject Matter

7. Claims 2, 7 and 28-30 are objected to as being dependent upon a rejected base claim, but would be allowable if rewritten in independent form including all of the limitations of the base claim and any intervening claims.

Response to Arguments

8. Applicant's arguments filed on 6/10/05 have been fully considered but they are not persuasive.

The applicant mainly argues that with respect to claim 1, Raghavan does not disclose the limitation “a calibration circuit responsive to an altered reference signal of said transmitter circuit altered by the transmission medium for adjusting the reference signal level of one of said transmitter and receiver circuits to compensate for variation in the transmission signal due to said transfer function”.

The examiner respectfully disagrees. Raghavan discloses a system (see figure 2) comprising: a transmitter circuit “transmitter” (see col. 4, line 64); a receiver circuit (200); a transmission medium (10) having a transfer function ($f(z)$) for transmitting a transmission signal between said transmitter and receiver circuits; and a calibration circuit (208). The transmission medium (10) comprises couplers (102, 104) (see col. 4, lines 64-67) contributing to said transfer function ($f(z)$), the couplers causing “killer packets” which result in variations in the transmission signal (see col. 2, lines 25-37, 53-62). Raghavan calibration circuit (208) is considered here equivalent with the “calibration circuit”, as claimed, in such a way that in responsive to a reference signal (a_k) of said transmitter circuit being altered in to an altered reference signal (r_k) by the transmission medium (see col. 4, line 63 to col. 5, line 44), an output symbol (a^{\wedge}_k) is obtained through a process (202, 203, 212, 201, 204, 205); and in turn, in responsive to the output symbol (a^{\wedge}_k), calibration circuit (208) adjusts the reference signal level (V_{REF}) of the A/D (203) of the receiver circuit so that the A/D (203) will not clip its input signal being resulted from killer packets (see figure 6, and col. 10, lines 20-42); or in another word, it can be said that in response to the altered reference signal (r_k) of said transmitter circuit altered by the transmission medium, the calibration circuit (208) adjusts the reference signal level (V_{REF})

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of the A/D (203) of the receiver circuits to compensate for variations in the transmission signal due to said transfer function.

Conclusion

9. **THIS ACTION IS MADE FINAL.** Applicant is reminded of the extension of time policy as set forth in 37 CFR 1.136(a).

A shortened statutory period for reply to this final action is set to expire **THREE MONTHS** from the mailing date of this action. In the event a first reply is filed within **TWO MONTHS** of the mailing date of this final action and the advisory action is not mailed until after the end of the **THREE-MONTH** shortened statutory period, then the shortened statutory period will expire on the date the advisory action is mailed, and any extension fee pursuant to 37 CFR 1.136(a) will be calculated from the mailing date of the advisory action. In no event, however, will the statutory period for reply expire later than **SIX MONTHS** from the mailing date of this final action.

10. Any inquiry concerning this communication or earlier communications from the examiner should be directed to **Phuong Phu** whose telephone number is **571-272-3009**. The examiner can normally be reached on **M-F (6:30-2:30)**.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, **Mohammad Ghayour** can be reached on **571-272-3021**. The fax phone number for the organization where this application or proceeding is assigned is **703-872-9306**.

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Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see <http://pair-direct.uspto.gov>. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free).

Phuong Phu
Phuong Phu
06/21/05

PHUONG PHU
PRIMARY EXAMINER

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Art Unit 2631